Lincoln Wastewater System

Assumptions and declarations regarding the preparation of the 12 yr CIP Gap Projections - 12/16/02

General

Comprehensive Plan Population	327,306 for 2025
Average Daily Per capita Flow	113 gpd (includes industrial contributions)
Trunk Sewer Flow Projections	Used existing City Standard Design Equation
Collection System	Gravity Flow for Collecting & Conveying
Design Flows & Loadings	Projected from Historical Information

Peak Wet Weather Design Flows in MGD

Year	2000	2010	2020	2030
Theresa Street WWTF	77.3	92.8	108	125
Northeast WWTF	31.3	32.0	37	43
Total	108.6	124.0	152	168

Wastewater Loading Rate Projections

	2000	2010	2020	2050
		Theresa Street		
BOD5 (ppd)	40,000	46,400	53,900	84,200
TSS (ppd)	42,000	48,700	56,600	88,400
NH3-N (ppd)	6,000	7,000	8,100	12,600
		Northeast		
BOD5 (ppd)	11,500	13,300	15,500	24,200
TSS (ppd)	13,000	15,100	17,500	27,400
NH3-N (ppd)	1,800	2,100	2,400	3,800
		Total		
BOD5 (ppd)	51,500	59,700	69,400	108,400
TSS (ppd)	55,000	63,800	74,100	115,800
NH3-N (ppd)	7,800	9,100	10,500	16,400
Population	225,581	261,796	303,825	474,903

Trunk Sewers

Sanitary sewers designed for 50-100 year life

Sub-Basin Sewer Cost Estimate = Acreage * $ 867.49 - $ 452,188

Wastewater Trunk Line Cost

Size	Total Project Cost per Lineal Foot
90”	$ 850
78”	$ 700
72”	$ 600
60”	$ 450
54”	$ 380
51”	$ 350
48”	$ 300
42”	$ 275
36”	$ 230
30”	$ 190
27”	$ 160
24”	$ 130
21”	$ 100
18”	$ 80
15”	$ 65
12”	$ 50
10”	$ 35

Lift Stations

Use of lift stations to divert flows or alternative to gravity sewer systems discouraged
Existing lift station structures adequate for the 12-year planning period.
No new lift stations included in future service plan

Treatment

Existing two Treatment Facilities will be expanded to treat future flows and loads
Existing Treatment Facilities: Theresa St. & Northeast
Existing Treatment Capacity
- Expansion required to meet future hydraulic and organic loads
- Future NPDES effluent discharge permit limits for ammonia required
- New NPDES permit to be issued in 1st quarter of 2003
  - Seasonal Limits for ammonia utilized – Spring, summer, & winter.
- Sanitary Sewer Overflow (SSO) Regulations for peak flows -within 5 years

Treatment Facilities designed for 2:1 peak to average daily flow condition
- Provide pumping capacity to meet Peak wet weather flows
- Provide future treatment for Peak Wet Weather events

Odor Controls assumed for all new construction at treatment facilities
Costs for New Treatment Capacity $1.90 per gallon of capacity
Flow & Load Projections used for sizing:

Peak Wet Weather Design Flows in MGD

(MGD – millions gallons per day)

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•ppd – pounds per day

- BOD – Biochemical Oxygen Demand – 5 day
- TSS - Total Suspended Solids
- NH3- N – Ammonia Nitrogen